

Amendments to the Claims:

1. (original) A process control instrument comprising:

2 a control for generating or receiving a high frequency signal;

a waveguide comprising a cylindrical housing closed at one end by a rear wall;

4 a loop launcher operatively connected to the control and comprising a wire having

a first straight leg electrically connected at one end to the control and extending into the waveguide

6 a first select length, a second straight leg connected at one end to the rear wall and extending into

the waveguide a second select length, greater than the first select length, and a curved middle section

8 connecting other ends of the first and second straight legs; and

an antenna operatively coupled to the waveguide.

2. (original) The process control instrument of claim 1 wherein the second leg is

2 located at a center axis of the waveguide.

3. (original) The process control instrument of claim 1 wherein the first leg is

2 located off center in the waveguide.

4. (original) The process control instrument of claim 1 wherein the first select
2 length is about a quarter wavelength.

5. (original) The process control instrument of claim 1 wherein the waveguide has
2 a length of about three-quarter waveguide wavelength.

6. (original) The process control instrument of claim 1 wherein the curved middle
2 section has a radius of about 10mm.

7. (original) The process control instrument of claim 1 wherein the loop launcher
2 is asymmetrically placed entirely on one side of an axis of the waveguide.

8. (original) The process control instrument of claim 1 wherein the first leg is
2 parallel with the second leg.

9. (original) The process control instrument of claim 1 wherein the waveguide is
2 filled with a dielectric material substantially surrounding the loop launcher.

10. (original) The process control instrument of claim 1 further comprising a
2 coupling cavity surrounding the waveguide for coupling the antenna to the waveguide.

11. (original) The process control instrument of claim 10 wherein the coupling
- 2 cavity is formed of metal to define an intermediate waveguide.

12. (original) A process control instrument comprising:

2 a control for generating or receiving a high frequency signal;

a waveguide comprising a cylindrical housing open at a distal end and closed at an

4 inner end by a rear wall;

a loop launcher operatively connected to the control and comprising a wire electrically

6 connected at one end to the control and extending into the waveguide and connected at another end
to the rear wall;

8 a coupling cavity comprising an open cylinder surrounding the waveguide and
extending beyond the waveguide open end; and

an antenna operatively coupled to the coupling cavity and the waveguide.

13. (original) The process control instrument of claim 12 wherein the coupling

2 cavity extends beyond the waveguide open end a length in a range of about 7, 9, 11 or higher odd
multiples of quarter waveguide wavelength.

14. (original) The process control instrument of claim 12 wherein the coupling

2 cavity is of metal construction.

15. (original) The process control instrument of claim 14 wherein the coupling

2 cavity comprises a process connection.

16. (original) The process control instrument of claim 12 wherein the loop launcher
2 comprises a wire having a first straight leg electrically connected at one end to the control and
extending into the waveguide a first select length, a second straight leg connected at one end to the
4 rear wall and extending into the waveguide a second select length, greater than the first select length,
and a curved middle section connecting other ends of the first and second straight legs

17. (original) The process control instrument of claim 12 further comprising a union
2 nut operatively secured to the waveguide for threading relative to the antenna at any angular
orientation.

Claims 18-24 cancelled.

25. (original) A process control instrument comprising:

2 a housing;

a control in the housing for generating or receiving a high frequency signal;

4 a waveguide comprising a cylindrical housing closed at one end by a rear wall;

a loop launcher operatively connected to the control and comprising a wire electrically

6 connected at one end to the control and extending into the waveguide and connected at another end

to the rear wall to develop an asymmetrical radiated electromagnetic field;

8 an antenna operatively coupled to the waveguide; and

means for rotatably mounting the waveguide to the housing so that the housing and

10 the loop launcher can be independently oriented relative to a process vessel.

26. (original) The process control instrument of claim 25 wherein the means for

2 rotatably mounting the waveguide to the housing comprises a waveguide adapter defining the rear

wall of the waveguide and having a thread received in a threaded opening of the housing.

27. (original) The process control instrument of claim 26 wherein a set screw in the

2 housing maintains the waveguide adapter in a desired rotational position.

28. (original) The process control instrument of claim 25 wherein the waveguide
2 comprise a two piece assembly including a waveguide adapter operatively secured to the housing and
a waveguide adapter tube extending from the waveguide adapter and defining the cylindrical housing
4 so that the waveguide adapter defines the rear wall.

29. (original) The process control instrument of claim 28 further comprising a
2 conductor passing through the waveguide adapter for connecting the loop launcher to the control.

30. (currently amended) The process control instrument of claim 25 further
2 comprising a union nut operatively secured to the waveguide for threading relative to the antenna
at any angular orientation so that the housing and the loop launcher can be independently oriented
4 relative to the [[a]] process vessel.

31. (original) The process control instrument of claim 30 wherein the waveguide
2 adapter tube includes an annular shoulder and the union nut is operatively secured to the waveguide
adapter tube between the shoulder and a snap ring.

32. (original) The process control instrument of claim 25 wherein the loop launcher
2 comprises an asymmetrical wire.

33. (original) The process control instrument of claim 25 wherein the loop launcher
2 comprises a wire having a first straight leg electrically connected at one end to the control and
extending into the waveguide a first select length, a second straight leg connected at one end to the
4 rear wall and extending into the waveguide a second select length, greater than the first select length,
and a curved middle section connecting other ends of the first and second straight legs.

Claims 34-37 cancelled.